

SEQUENCE LISTING

<110> Berlin, Vivian Chiu, Maria Isabel Cottarel, Guillaume Damagnez, Veronique

<120> IMMUNOSUPPRESSANT TARGET PROTEINS

<130> APBI-P06-036

<140> US 09/517,491

<141> 2000-03-02

<150> US 08/360,144

<151> 1994-12-20

<150> US 08/250,795

<151> 1994-05-27

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cac agc aac acg ctg gtc cag cag gcc atg atg gtg agt gaa gag ctg 96
His Ser Asn Thr Leu Val Gln Gln Ala Met Met Val Ser Glu Glu Leu
20 25 30

att cgg gta gcc atc ctc tgg cat gag atg tgg cat gaa ggc ctg gaa 144
Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Gly Leu Glu
35 40 45

gag gca tct cgc ttg tac ttt ggg gag agg aac gtg aaa ggc atg ttt 192 Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met Phe 50 55 60

gag gtg ctg gag ccc ctg cat gct atg atg gaa cgg ggt ccc cgg act 240
Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Arg Thr
65 70 75 80

ctg aag gaa aca tcc ttt aat cag gca tat ggc cga gat tta atg gag 288 Leu Lys Glu Thr Ser Phe Asn Gln Ala Tyr Gly Arg Asp Leu Met Glu

95 90 85 gca caa gaa tgg tgt cga aag tac atg aag tcg ggg aac gtc aag gac 336 Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys Asp 100 105 ctc acg caa gcc tgg gac ctc tac tat cac gtg ttc aga cgg atc tca 384 Leu Thr Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile Ser 125 aag cag cta ccc cag ctc aca tcc ctg gag ctg cag tat gtg tcc ccc 432 Lys Gln Leu Pro Gln Leu Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro 140 135 aaa ctt ctg atg tgc cga gac ctt gag ttg gct gtg cca gga aca tac 480 Lys Leu Leu Met Cys Arg Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr 145 150 155 486 gac ccc Asp Pro <210> 2 <211> 162 <212> PRT <213> Mouse <400> 2 Leu Thr Arg His Asn Ala Ala Asn Lys Ile Leu Lys Asn Met Cys Glu 1 His Ser Asn Thr Leu Val Gln Gln Ala Met Met Val Ser Glu Glu Leu 20 . 25 Ile Arg Val Ala Ile Leu Trp His Glu Met Trp His Glu Gly Leu Glu 40 Glu Ala Ser Arg Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met Phe 55 Glu Val Leu Glu Pro Leu His Ala Met Met Glu Arg Gly Pro Arg Thr 75 70 Leu Lys Glu Thr Ser Phe Asn Gln Ala Tyr Gly Arg Asp Leu Met Glu 85 Ala Gln Glu Trp Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys Asp 105 100 Leu Thr Gln Ala Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile Ser 115 120 125 Lys Gln Leu Pro Gln Leu Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro 135 140 Lys Leu Leu Met Cys Arg Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr 150 155 145 Asp Pro <210> 3 <211> 40 <212> DNA

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ggg atg ctt gaa gat gga aag aaa ttt gat tcc tcc cgt gac cgt aac Gly Met Leu Glu Asp Gly Lys Lys Phe Asp Ser Ser Arg Asp Arg Asn 30 35 40	145										
aag ccc ttt aag ttt atg cta ggc aag cag gag gtg atc cga ggc tgg Lys Pro Phe Lys Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp 45 50 55 60	193										
gaa gaa ggg gtt gcc cag atg agt gtg ggt cag cgt gcc aaa ctg act Glu Glu Gly Val Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr 65 70 75	241										
ata tct cca gat tat gcc tat ggt gcc act ggg cac cca ggc atc atc Ile Ser Pro Asp Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile 80 85 90	289										
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Phe Met Leu Gly Lys Gln Glu Val Ile Arg Gly Trp Glu Glu Gly Val
Ala Gln Met Ser Val Gly Gln Arg Ala Lys Leu Thr Ile Ser Pro Asp
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Tyr Ala Tyr Gly Ala Thr Gly His Pro Gly Ile Ile Pro Pro His Ala
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ctg Leu	Gly 999	cac His	ctg Leu 20	gtc Val	tcc Ser	aat Asn	gcc Ala	ccc Pro 25	cga Arg	ctc Leu	atc Ile	cgc Arg	ccc Pro 30	tac Tyr	atg Met	96
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gat Asp	cca Pro 50	aac Asn	cca Pro	ggt Gly	gtg Val	atc Ile 55	aat Asn	aat Asn	gtc Val	ctg Leu	gca Ala 60	aca Thr	ata Ile	gga Gly	gaa Glu	192
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					gac Asp											288
agg Arg	cag Gln	gtg Val	gct Ala 100	ctg Leu	tgg Trp	acc Thr	ctg Leu	gga Gly 105	cag Gln	ttg Leu	gtg Val	gcc Ala	agc Ser 110	act Thr	ggc Gly	336
tat Tyr	gta Val	gta Val 115	gag Glu	ccc Pro	tac Tyr	agg Arg	aag Lys 120	tac Tyr	cct Pro	act Thr	ttg Leu	ctt Leu 125	gag Glu	gtg Val	cta Leu	384
ctg Leu	aat Asn 130	ttt Phe	ctg Leu	aag Lys	act Thr	gag Glu 135	cag Gln	aac Asn	cag Gln	ggt Gly	aca Thr 140	cgc Arg	aga Arg	gag Glu	gcc Ala	432
atc Ile 145	cgt Arg	gtg Val	tta Leu	ggg ggg	ctt Leu 150	tta Leu	gly ggg	gct Ala	ttg Leu	gat Asp 155	cct Pro	tac Tyr	aag Lys	cac His	aaa Lys 160	480
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ctg Leu	tca Ser	gaa Glu	tcc Ser	aag Lys	tca Ser	agt Ser	cag Gln	gat Asp	tcc Ser	tct Ser	gac Asp	tat Tyr	agc Ser	act Thr	agt Ser	576

190 185 180 gaa atg ctg gtc aac atg gga aac ttg cct ctg gat gag ttc tac cca 624 Glu Met Leu Val Asn Met Gly Asn Leu Pro Leu Asp Glu Phe Tyr Pro 200 gct gtg tcc atg gtg gcc ctg atg cgg atc ttc cga gac cag tca ctc 672 Ala Val Ser Met Val Ala Leu Met Arg Ile Phe Arg Asp Gln Ser Leu 215 tct cat cat cac acc atg gtt gtc cag gcc atc acc ttc atc ttc aag 720 Ser His His His Thr Met Val Val Gln Ala Ile Thr Phe Ile Phe Lys 235 tcc ctg gga ctc aaa tgt gtg cag ttc ctg ccc cag gtc atg ccc acg 768 Ser Leu Gly Leu Lys Cys Val Gln Phe Leu Pro Gln Val Met Pro Thr 250 ttc ctt aat gtc att cga gtc tgt gat ggg gcc atc cgg gaa ttt ttg 816 Phe Leu Asn Val Ile Arg Val Cys Asp Gly Ala Ile Arg Glu Phe Leu 265 ttc cag cag ctg gga atg ttg gtg tcc ttt gtg aag agc cac atc aga 864 Phe Gln Gln Leu Gly Met Leu Val Ser Phe Val Lys Ser His Ile Arg 280 cct tat atg gat gaa ata gtc acc ctc atg aga gaa ttc tgg gtc atg 912 Pro Tyr Met Asp Glu Ile Val Thr Leu Met Arg Glu Phe Trp Val Met 290 295 aac acc tca att cag agc acg atc att ctt ctc att gag caa att gtg 960 Asn Thr Ser Ile Gln Ser Thr Ile Ile Leu Leu Ile Glu Gln Ile Val 310 305 1008 gta gct ctt ggg ggt gaa ttt aag ctc tac ctg ccc cag ctg atc cca Val Ala Leu Gly Gly Glu Phe Lys Leu Tyr Leu Pro Gln Leu Ile Pro 330 325 cac atg ctg cgt gtc ttc atg cat gac aac agc cca ggc cgc att gtc 1056 His Met Leu Arg Val Phe Met His Asp Asn Ser Pro Gly Arg Ile Val 345 1104 tot atc aag tta ctg gct gca atc cag ctg ttt ggc gcc aac ctg gat Ser Ile Lys Leu Leu Ala Ala Ile Gln Leu Phe Gly Ala Asn Leu Asp 360 355 1152 gac tac ctg cat tta ctg ctg cct cct att gtt aag ttg ttt gat gcc Asp Tyr Leu His Leu Leu Pro Pro Ile Val Lys Leu Phe Asp Ala 370 375 1200 cct gaa gct cca ctg cca tct cga aag gca gcg cta gag act gtg gac Pro Glu Ala Pro Leu Pro Ser Arg Lys Ala Ala Leu Glu Thr Val Asp

390

405

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Arg Leu Thr Glu Ser Leu Asp Phe Thr Asp Tyr Ala Ser Arg Ile Ile

410

1248

385

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gtt Val	ctg Leu	ctg Leu	ggt Gly	gag Glu 645	aga Arg	gct Ala	gcc Ala	aag Lys	tgc Cys 650	cga Arg	gca Ala	tat Tyr	gcc Ala	aaa Lys 655	gca Ala	1968

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acc cca to Thr Pro Se	eg ccg ctg er Pro Leu 112	Gln Lys	aag gtc Lys Val	act gag Thr Glu 1130	gat ctg Asp Leu	tcc aaa Ser Lys 113	Thr	3408
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gag Glu	ttt Phe	gtt Val	ttc Phe	ctt Leu 1445	Leu	aaa Lys	ggc Gly	cat His	gaa Glu 1450	Asp	ctg Leu	cgc Arg	cag Gln	gat Asp 1455	Glu	4368
cgt Arg	gtg Val	atg Met	cag Gln 1460	Leu	ttc Phe	ggc Gly	ctg Leu	gtt Val 1465	Asn	acc Thr	ctt Leu	ctg Leu	gcc Ala 1470	aat Asn)	gac Asp	4416
cca Pro	aca Thr	tct Ser 1475	Leu	cgg Arg	aaa Lys	aac Asn	ctc Leu 1480	Ser	atc Ile	cag Gln	aga Arg	tac Tyr 1485	Ala	gtc Val	atc Ile	4464
cct Pro	tta Leu 1490	Ser	acc Thr	aac Asn	tcg Ser	ggc Gly 1495	Leu	att Ile	ggc Gly	tgg Trp	gtt Val 1500	Pro	cac His	tgt Cys	gac Asp	4512
	Leu					Arg					Lys			atc Ile		4560
ctc Leu	aac Asn	atc Ile	gag Glu	cat His 1525	Arg	atc Ile	atg Met	ttg Leu	cgg Arg 1530	Met	gct Ala	ccg Pro	gac Asp	tat Tyr 1535	Asp	4608
cac His	ttg Leu	act Thr	ctg Leu 1540	Met	cag Gln	aag Lys	gtg Val	gag Glu 1545	Val	ttt Phe	gag Glu	cat His	gcc Ala 1550	gtc Val)	aat Asn	4656
aat Asn	aca Thr	gct Ala 1559	Gly	gac Asp	gac Asp	ctg Leu	gcc Ala 1560	Lys	ctg Leu	ctg Leu	tgg Trp	ctg Leu 1569	Lys	agc Ser	ccc Pro	4704
agc Ser	tcc Ser 1570	Glu	gtg Val	tgg Trp	ttt Phe	gac Asp 157	Arg	aga Arg	acc Thr	aat Asn	tat Tyr 1580	Thr	cgt Arg	tct Ser	tta Leu	4752

gcg gtc atg tca Ala Val Met Ser 1585	atg gtt ggg Met Val Gly 1590	tat att tta Tyr Ile Leu	ggc ctg gga Gly Leu Gly 1595	gat aga cac Asp Arg His 1600	4800
cca tcc aac ctg Pro Ser Asn Leu	atg ctg gac Met Leu Asp 1605	cgt ctg agt Arg Leu Ser 161	Gly Lys Ile	ctg cac att Leu His Ile 1615	4848
gac ttt ggg gac Asp Phe Gly Asp 162	Cys Phe Glu	gtt gct atg Val Ala Met 1625	acc cga gag Thr Arg Glu	aag ttt cca Lys Phe Pro 1630	4896
gag aag att cca Glu Lys Ile Pro 1635	ttt aga cta Phe Arg Leu	aca aga atg Thr Arg Met 1640	ttg acc aat Leu Thr Asn 164	Ala Met Glu	494 4
gtt aca ggc ctg Val Thr Gly Leu 1650	gat ggc aac Asp Gly Asn 1659	Tyr Arg Ile	aca tgc cac Thr Cys His 1660	aca gtg atg Thr Val Met	4992
gag gtg ctg cga Glu Val Leu Arg 1665	gag cac aag Glu His Lys 1670	gac agt gtc Asp Ser Val	atg gcc gtg Met Ala Val 1675	ctg gaa gcc Leu Glu Ala 1680	5040
ttt gtc tat gac Phe Val Tyr Asp	ccc ttg ctg Pro Leu Leu 1685	aac tgg agg Asn Trp Arg 169	Leu Met Asp	aca aat acc Thr Asn Thr 1695	5088
aaa ggc aac aag Lys Gly Asn Lys 170	Arg Ser Arg	acg agg acg Thr Arg Thr 1705	gat tcc tac Asp Ser Tyr	tct gct ggc Ser Ala Gly 1710	5136
cag tca gtc gaa Gln Ser Val Glu 1715	att ttg gac Ile Leu Asp	ggt gtg gaa Gly Val Glu 1720	ctt gga gag Leu Gly Glu 172	Pro Ala His	5184
aag aaa acg ggg Lys Lys Thr Gly 1730	acc aca gtg Thr Thr Val 173	Pro Glu Ser	att cat tct Ile His Ser 1740	ttc att gga Phe Ile Gly	5232
gac ggt ttg gtg Asp Gly Leu Val 1745	aaa cca gag Lys Pro Glu 1750	gcc cta aat Ala Leu Asn	aag aaa gct Lys Lys Ala 1755	atc cag att Ile Gln Ile 1760	5280
att aac agg gtt Ile Asn Arg Val	cga gat aag Arg Asp Lys 1765	ctc act ggt Leu Thr Gly 177	Arg Asp Phe	tct cat gat Ser His Asp 1775	5328
gac act ttg gat Asp Thr Leu Asp 178	Val Pro Thr	caa gtt gag Gln Val Glu 1785	ctg ctc atc Leu Leu Ile	aaa caa gcg Lys Gln Ala 1790	5376
aca tcc cat gaa Thr Ser His Glu 1795	aac ctc tgc Asn Leu Cys	cag tgc tat Gln Cys Tyr 1800	att ggc tgg Ile Gly Trp 180	Cys Pro Phe	5424
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Asp Pro Asn Pro Gly Val Ile Asn Asn Val Leu Ala Thr Ile Gly Glu
Leu Ala Gln Val Ser Gly Leu Glu Met Arg Lys Trp Val Asp Glu Leu
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Phe Ile Ile Met Asp Met Leu Gln Asp Ser Ser Leu Leu Ala Lys
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Arg Gln Val Ala Leu Trp Thr Leu Gly Gln Leu Val Ala Ser Thr Gly
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Tyr Val Val Glu Pro Tyr Arg Lys Tyr Pro Thr Leu Leu Glu Val Leu
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Leu Asn Phe Leu Lys Thr Glu Gln Asn Gln Gly Thr Arg Arg Glu Ala
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Ile Arg Val Leu Gly Leu Leu Gly Ala Leu Asp Pro Tyr Lys His Lys
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Val Asn Ile Gly Met Ile Asp Gln Ser Arg Asp Ala Ser Ala Val Ser
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Leu Ser Glu Ser Lys Ser Ser Gln Asp Ser Ser Asp Tyr Ser Thr Ser
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Glu Met Leu Val Asn Met Gly Asn Leu Pro Leu Asp Glu Phe Tyr Pro
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Ala Val Ser Met Val Ala Leu Met Arg Ile Phe Arg Asp Gln Ser Leu
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Ser His His His Thr Met Val Val Gln Ala Ile Thr Phe Ile Phe Lys
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Ser Leu Gly Leu Lys Cys Val Gln Phe Leu Pro Gln Val Met Pro Thr
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Phe Leu Asn Val Ile Arg Val Cys Asp Gly Ala Ile Arg Glu Phe Leu
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Phe Gln Gln Leu Gly Met Leu Val Ser Phe Val Lys Ser His Ile Arg
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Pro Tyr Met Asp Glu Ile Val Thr Leu Met Arg Glu Phe Trp Val Met
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Asn Thr Ser Ile Gln Ser Thr Ile Ile Leu Leu Ile Glu Gln Ile Val
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Val Ala Leu Gly Gly Glu Phe Lys Leu Tyr Leu Pro Gln Leu Ile Pro
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His Met Leu Arg Val Phe Met His Asp Asn Ser Pro Gly Arg Ile Val
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Ser Ile Lys Leu Leu Ala Ala Ile Gln Leu Phe Gly Ala Asn Leu Asp
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Asp Tyr Leu His Leu Leu Pro Pro Ile Val Lys Leu Phe Asp Ala
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Pro Glu Ala Pro Leu Pro Ser Arg Lys Ala Ala Leu Glu Thr Val Asp
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Arg Leu Thr Glu Ser Leu Asp Phe Thr Asp Tyr Ala Ser Arg Ile Ile
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His Pro Ile Val Arg Thr Leu Asp Gln Ser Pro Glu Leu Arg Ser Thr
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Ala Met Asp Thr Leu Ser Ser Leu Val Phe Gln Leu Gly Lys Lys Tyr
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Gln Ile Phe Ile Pro Met Val Asn Lys Val Leu Val Arg His Arg Ile
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Asn His Gln Arg Tyr Asp Val Leu Ile Cys Arg Ile Val Lys Gly Tyr
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Thr Leu Ala Asp Glu Glu Glu Asp Pro Leu Ile Tyr Gln His Arg Met
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Leu Arg Ser Gly Gln Gly Asp Ala Leu Ala Ser Gly Pro Val Glu Thr
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Gly Pro Met Lys Lys Leu His Val Ser Thr Ile Asn Leu Gln Lys Ala
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Trp Gly Ala Ala Arg Arg Val Ser Lys Asp Asp Trp Leu Glu Trp Leu
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Arg Arg Leu Ser Leu Glu Leu Leu Lys Asp Ser Ser Pro Ser Leu
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Arg Ser Cys Trp Ala Leu Ala Gln Ala Tyr Asn Pro Met Ala Arg Asp
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Leu Phe Asn Ala Ala Phe Val Ser Cys Trp Ser Glu Leu Asn Glu Asp
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Gln Gln Asp Glu Leu Ile Arq Ser Ile Glu Leu Ala Leu Thr Ser Gln
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Asp Ile Ala Glu Val Thr Gln Thr Leu Leu Asn Leu Ala Glu Phe Met
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Glu His Ser Asp Lys Gly Pro Leu Pro Leu Arg Asp Asp Asn Gly Ile
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Val Leu Leu Gly Glu Arg Ala Ala Lys Cys Arg Ala Tyr Ala Lys Ala
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Leu His Tyr Lys Glu Leu Glu Phe Gln Lys Gly Pro Thr Pro Ala Ile
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                                665
Leu Glu Ser Leu Ile Ser Ile Asn Asn Lys Leu Gln Gln Pro Glu Ala
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Ala Ala Gly Val Leu Glu Tyr Ala Met Lys His Phe Gly Glu Leu Glu
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Ile Gln Ala Thr Trp Tyr Glu Lys Leu His Glu Trp Glu Asp Ala Leu
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Val Ala Tyr Asp Lys Lys Met Asp Thr Asn Lys Asp Asp Pro Glu Leu
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Met Leu Gly Arg Met Arg Cys Leu Glu Ala Leu Gly Glu Trp Gly Gln
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Leu His Gln Gln Cys Cys Glu Lys Trp Thr Leu Val Asn Asp Glu Thr
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Gln Ala Lys Met Ala Arg Met Ala Ala Ala Ala Ala Trp Gly Leu Gly
                        775
Gln Trp Asp Ser Met Glu Glu Tyr Thr Cys Met Ile Pro Arg Asp Thr
                                         795
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His Asp Gly Ala Phe Tyr Arg Ala Val Leu Ala Leu His Gln Asp Leu
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Phe Ser Leu Ala Gln Gln Cys Ile Asp Lys Ala Arg Asp Leu Leu Asp
                                825
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Ala Glu Leu Thr Ala Met Ala Gly Glu Ser Tyr Ser Arg Ala Tyr Gly
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Ala Met Val Ser Cys His Met Leu Ser Glu Leu Glu Glu Val Ile Gln
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Tyr Lys Leu Val Pro Glu Arg Arg Glu Ile Ile Arg Gln Ile Trp Trp
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Glu Arg Leu Gln Gly Cys Gln Arg Ile Val Glu Asp Trp Gln Lys Ile
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Leu Met Val Arg Ser Leu Val Val Ser Pro His Glu Asp Met Arg Thr
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                                                    910
Trp Leu Lys Tyr Ala Ser Leu Cys Gly Lys Ser Gly Arg Leu Ala Leu
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                            920
Ala His Lys Thr Leu Val Leu Leu Leu Gly Val Asp Pro Ser Arg Gln
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                        935
Leu Asp His Pro Leu Pro Thr Val His Pro Gln Val Thr Tyr Ala Tyr
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Met Lys Asn Met Trp Lys Ser Ala Arg Lys Ile Asp Ala Phe Gln His
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                                    970
Met Gln His Phe Val Gln Thr Met Gln Gln Gln Ala Gln His Ala Ile
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Ala Thr Glu Asp Gln Gln His Lys Gln Glu Leu His Lys Leu Met Ala
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Arg Cys Phe Leu Lys Leu Gly Glu Trp Gln Leu Asn Leu Gln Gly Ile
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Asn Glu Ser Thr Ile Pro Lys Val Leu Gln Tyr Tyr Ser Ala Ala Thr
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Glu His Asp Arg Ser Trp Tyr Lys Ala Trp His Ala Trp Ala Val Met
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Asn Phe Glu Ala Val Leu His Tyr Lys His Gln Asn Gln Ala Arg Asp
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            1060
Glu Lys Lys Leu Arg His Ala Ser Gly Ala Asn Ile Thr Asn Ala
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                            1080
                                                1085
Thr Thr Ala Ala Thr Thr Ala Ala Thr Ala Thr Thr Ala Ser Thr
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                        1095
Glu Gly Ser Asn Ser Glu Ser Glu Ala Glu Ser Thr Glu Asn Ser Pro
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Thr Pro Ser Pro Leu Gln Lys Lys Val Thr Glu Asp Leu Ser Lys Thr
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                                    1130
                                                        1135
Leu Leu Met Tyr Thr Val Pro Ala Val Gln Gly Phe Phe Arg Ser Ile
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            1140
                                1145
Ser Leu Ser Arg Gly Asn Asn Leu Gln Asp Thr Leu Arg Val Leu Thr
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                            1160
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Leu Trp Phe Asp Tyr Gly His Trp Pro Asp Val Asn Glu Ala Leu Val
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                                            1180
Glu Gly Val Lys Ala Ile Gln Ile Asp Thr Trp Leu Gln Val Ile Pro
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                    1190
Gln Leu Ile Ala Arg Ile Asp Thr Pro Arg Pro Leu Val Gly Arg Leu
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                                    1210
                                                        1215
Ile His Gln Leu Leu Thr Asp Ile Gly Arg Tyr His Pro Gln Ala Leu
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                                                    1230
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Ile Tyr Pro Leu Thr Val Ala Ser Lys Ser Thr Thr Thr Ala Arg His
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                                                1245
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Asn Ala Ala Asn Lys Ile Leu Lys Asn Met Cys Glu His Ser Asn Thr
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                                            1260
Leu Val Gln Gln Ala Met Met Val Ser Glu Glu Leu Ile Arg Val Ala
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Ile Leu Trp His Glu Met Trp His Glu Gly Leu Glu Glu Ala Ser Arg
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Leu Tyr Phe Gly Glu Arg Asn Val Lys Gly Met Phe Glu Val Leu Glu
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Pro Leu His Ala Met Met Glu Arg Gly Pro Gln Thr Leu Lys Glu Thr
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Ser Phe Asn Gln Ala Tyr Gly Arg Asp Leu Met Glu Ala Gln Glu Trp
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Cys Arg Lys Tyr Met Lys Ser Gly Asn Val Lys Asp Leu Thr Gln Ala
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Trp Asp Leu Tyr Tyr His Val Phe Arg Arg Ile Ser Lys Gln Leu Pro
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                                    1370
Gln Leu Thr Ser Leu Glu Leu Gln Tyr Val Ser Pro Lys Leu Leu Met
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Cys Arg Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr Asp Pro Asn Gln
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Pro Ile Ile Arg Ile Gln Ser Ile Ala Pro Ser Leu Gln Val Ile Thr
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Ser Lys Gln Arg Pro Arg Lys Leu Thr Leu Met Gly Ser Asn Gly His
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Glu Phe Val Phe Leu Leu Lys Gly His Glu Asp Leu Arg Gln Asp Glu
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Arg Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Ala Asn Asp
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Pro Thr Ser Leu Arg Lys Asn Leu Ser Ile Gln Arg Tyr Ala Val Ile
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Pro Leu Ser Thr Asn Ser Gly Leu Ile Gly Trp Val Pro His Cys Asp
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                        1495
Thr Leu His Ala Leu Ile Arg Asp Tyr Arg Glu Lys Lys Lys Ile Leu
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Leu Asn Ile Glu His Arg Ile Met Leu Arg Met Ala Pro Asp Tyr Asp
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                                                        1535
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His Leu Thr Leu Met Gln Lys Val Glu Val Phe Glu His Ala Val Asn
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Asn Thr Ala Gly Asp Asp Leu Ala Lys Leu Leu Trp Leu Lys Ser Pro
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Ser Ser Glu Val Trp Phe Asp Arg Arg Thr Asn Tyr Thr Arg Ser Leu
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Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His
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                                        1595
Pro Ser Asn Leu Met Leu Asp Arg Leu Ser Gly Lys Ile Leu His Ile
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                1605
Asp Phe Gly Asp Cys Phe Glu Val Ala Met Thr Arg Glu Lys Phe Pro
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            1620
Glu Lys Ile Pro Phe Arg Leu Thr Arg Met Leu Thr Asn Ala Met Glu
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Val Thr Gly Leu Asp Gly Asn Tyr Arg Ile Thr Cys His Thr Val Met
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                                            1660
Glu Val Leu Arg Glu His Lys Asp Ser Val Met Ala Val Leu Glu Ala
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Phe Val Tyr Asp Pro Leu Leu Asn Trp Arg Leu Met Asp Thr Asn Thr
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Lys Gly Asn Lys Arg Ser Arg Thr Arg Thr Asp Ser Tyr Ser Ala Gly
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Gln Ser Val Glu Ile Leu Asp Gly Val Glu Leu Gly Glu Pro Ala His
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Lys Lys Thr Gly Thr Thr Val Pro Glu Ser Ile His Ser Phe Ile Gly
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Asp Gly Leu Val Lys Pro Glu Ala Leu Asn Lys Lys Ala Ile Gln Ile
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Ile Asn Arg Val Arg Asp Lys Leu Thr Gly Arg Asp Phe Ser His Asp
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Asp Thr Leu Asp Val Pro Thr Gln Val Glu Leu Leu Ile Lys Gln Ala
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gaaccattac atcaaatgtt gcaaaaggga ccagaaacga tgagggaaca agcctttgca 300
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Ala Val Leu Trp His Glu Gln Trp His Asp Ala Leu Glu Asp Ala Ser
Arg Phe Phe Gly Glu His Asn Thr Glu Lys Met Phe Glu Thr Leu
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75

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Glu Pro Leu His Gln Met Leu Gln Lys Gly Pro Glu Thr Met Arg Glu
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Gln Ala Phe Ala Asn Ala Phe Gly Arg Glu Leu Thr Asp Ala Tyr Glu
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Trp Val Leu Asn Phe Arg Arg Thr Lys Asp Ile Thr Asn Leu Asn Gln
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Ala Trp Asp Ile Tyr Tyr Asn Val Phe Arg Arg Val Ser Lys Gln Val
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                                            140
Gln Leu Leu Ala Ser Leu Glu Leu Gln Tyr Val Ser Pro Asp Leu Glu
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His Ala Gln Asp Leu Glu Leu Ala Val Pro Gly Thr Tyr Gln Ala Gly
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Lys Pro Val Ile Arg Ile Ile Lys Phe Asp Pro Thr Phe Ser Ile Ile
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Ser Ser Lys Gln Arg Pro Arg Lys Leu Ser Cys Arg Gly Ser Asp Gly
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Lys Asp Tyr Gln Tyr Ala Leu Lys Gly His Glu Asp Ile Arg Gln Asp
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Asn Leu Val Met Gln Leu Phe Gly Leu Val Asn Thr Leu Leu Val Asn
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Asp Pro Val Cys Phe Lys Arg His Leu Asp Ile Gln Gln Tyr Pro Ala
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Ile Pro Leu Ser Pro Lys Val Gly Leu Leu Gly Trp Val Pro Asn Ser
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                                265
Asp Thr Phe His Val Leu Ile Lys Gly Tyr Arg Glu Ser Arg Ser Ile
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Met Leu Asn Ile Glu His Arg Leu Leu Gln Met Ala Pro Asp Tyr
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Asp Phe Leu Thr Leu Leu Gln Lys Val Glu Val Phe Thr Ser Ala Met
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Asp Asn Cys Lys Gly Gln Asp Leu Tyr Lys Val Leu Trp Leu Lys Ser
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Lys Ser Ser Glu Ala Trp Leu Asp Arg Arg Thr Thr Tyr Thr Arg Ser
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Leu Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg
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His Pro Ser Asn Leu Met Leu Asp Arg Ile Thr Gly Lys Val Ile His
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Ile Asp Phe Gly Asp Cys Phe Glu Ala Ala Ile Leu Arg Glu Lys Tyr
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Pro Glu Arg Val Pro Phe Arg Leu Thr Arg Met Leu Asn Tyr Ala Met
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Glu Val Ser Gly Ile Glu Gly Ser Phe Arg Ile Thr Cys Glu His Val
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Met Arg Val Leu Arg Asp Asn Lys Glu Ser Leu Met Ala Ile Leu Glu
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Ala Phe Ala Tyr Asp Pro Leu Ile Asn Trp Gly Phe Asp Phe Pro Thr
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Lys Ala Leu Ala Glu Ser Thr Gly Ile Arg Val Pro Gln Val Asn Thr
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Ala Glu Leu Leu Arg Arg Gly Gln Ile Asp Glu Lys Glu Ala Val Arg
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Leu Gln Lys Gln Asn Glu Leu Glu Ile Arg Asn Ala Arg Ala Ala Leu
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Val Leu Lys Arg Ile Thr Asp Lys Leu Thr Gly Asn Asp Ile Lys Arg
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Leu Arg Gly Leu Asp Val Pro Thr Gln Val Asp Lys Leu Ile Gln Gln
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Ile Glu Lys Met Phe Ser Thr Leu Glu Pro Leu His Lys His Leu Gly
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Asn Glu Pro Gln Thr Leu Ser Glu Val Ser Phe Gln Lys Ser Phe Gly
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Arg Asp Leu Asn Asp Ala Tyr Glu Trp Leu Asn Asn Tyr Lys Lys Ser
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Lys Asp Ile Asn Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val
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Phe Arg Lys Ile Thr Arg Gln Ile Pro Gln Leu Gln Thr Leu Asp Leu
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Val Pro Gly Thr Tyr
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<213> Homo sapiens
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gtcagccacg aattgatacg tatggcggtg ctttggcatg agcaatggta tgagggtctg 60
gatgacgcca gtaggcagtt ttttggagaa cataataccg aaaaaatgtt tgctgcttta 120
gagcctctgt acgaaatgct gaagagagga ccggaaactt tgagggaaat atcgttccaa 180
aattettttg gtagggaett gaatgaeget taegaatgge tgatgaatta caaaaaatet 240
aaagatgtta gtaatttaaa ccaagcgtgg gacatttact ataatgtttt caggaaaatt 300
ggtaaacagt tgccacaatt acaaactctt gaactacaac atgtgtcgcc aaaactacta 360
                                                                   399
tctgcgcatg atttggaatt ggctgtcccc gggacccgt
```

```
<210> 18
<211> 133
<212> PRT
<213> Homo sapiens
<400> 18
Val Ser His Glu Leu Ile Arg Met Ala Val Leu Trp His Glu Gln Trp
1
Tyr Glu Gly Leu Asp Asp Ala Ser Arg Gln Phe Phe Gly Glu His Asn
Thr Glu Lys Met Phe Ala Ala Leu Glu Pro Leu Tyr Glu Met Leu Lys
Arg Gly Pro Glu Thr Leu Arg Glu Ile Ser Phe Gln Asn Ser Phe Gly
Arg Asp Leu Asn Asp Ala Tyr Glu Trp Leu Met Asn Tyr Lys Lys Ser
65
Lys Asp Val Ser Asn Leu Asn Gln Ala Trp Asp Ile Tyr Tyr Asn Val
                                    90
Phe Arg Lys Ile Gly Lys Gln Leu Pro Gln Leu Gln Thr Leu Glu Leu
                                105
Gln His Val Ser Pro Lys Leu Leu Ser Ala His Asp Leu Glu Leu Ala
       115
Val Pro Gly Thr Arg
    130
<210> 19
<211> 531
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> 59, 64, 72, 74, 89, 94, 101, 137, 158, 175, 190, 201, 207,
210, 213, 218, 234, 243, 257, 283, 286, 289, 292, 314, 325,
328, 335, 352, 361, 380, 384, 390, 393, 403, 411, 413, 427,
432, 435, 440, 443, 450, 452, 460, 465, 480, 482, 486
<223> n = A, T, C \text{ or } G
<221> misc_feature
<222> 492, 515
<223> n = A,T,C or G
<400> 19
tgacceteae ecetteeace tateceaaaa aceteaetgg gtetgtggae aaacaacana 60
aatnttttcc ananaggccc caaatgagnc ccangggtct ntcttccatc agacccagtg 120
attetgegae teacaenett caatteaaga eetgacenet agtagggagg tttanteaga 180
tegetggean ceteggetga neagatnean agnggggnte getgtteagt gggneeacce 240
tenetggeet tetteancag gggtetggga tgtttteagt ggneenaana enetgtttag 300
agccagggct cagnaaacag aaaanctntc atggnggttc tggacacagg gnaggtctgg 360
nacatattgg ggattatgan cagnaccaan acnccactaa atnccccaag nanaaagtgt 420
aaccatntct anacnccatn ttntatcagn anaaattttn ttccnataaa tgacatcagn 480
531
<210> 20
<211> 231
<212> DNA
<213> Homo sapiens
```

```
<400> 20
gcgtataacg cgtttggaat cactacaggg atgtttaata ccactacaat ggatgatgta 60
tataactatc tattcgatga tgaagatacc ccaccaaacc caaaaaaaaga gatctggaat 120
tcggatcctc gagagatcta tgaatcgtag atactgaaaa accccgcaag ttcacttcaa 180
ctgtgcatcg tgcaccatct caatttcttt catttataca tcgttttgcc t
<210> 21
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
<223> oligonucleotide
<400> 21
                                                                    21
tgaagatacc ccaccaaacc c
<210> 22
<211> 18
<212> DNA
<213> Artificial Sequence
<223> oligonucleotide
<400> 22
                                                                    18
tgcacagttg aagtgaac
<210> 23
<211> 662
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> 27, 373, 443, 461, 483, 485, 507, 583, 588, 593, 605, 606,
607, 612, 624, 625, 626, 627, 628, 630, 631, 632, 635, 639,
646, 652, 659, 661
<223> n = A, T, C \text{ or } G
<400> 23
accaaaccca aaaaaagaga tcctagnaac tagtggatcc cccgggctgc aggaattcgg 60
tacgagtcgc cctcagcaga ctcgcccagg agaggaaagc atggaggaaa gaccacccat 120
ttggtttcgt ggctgtccca acaaaaaatc ccgatggcac gatgaacctc atgaactggg 180
agtgcgccat tccaggaaag aaagggactc cgtgggaagg aggcttgttt aaactacgga 240
tgcttttcaa agatgattat ccatcttcgc caccaaaatg taaattcgaa ccaccattat 300
ttcacccgaa tgtgtaccct tcggggacag tgtgcctgtc catcttagag gaggacaagg 360
actggagggc agncatcaca atcaaacagg atcctattag gaatacagga actttctaaa 420
tgaaccaaat atccaagacc agntcaagca gagggctaca ngatttactg ccaaaacaga 480
gtngngtacg agaaagggtc cgagcanagc cagaagtttg ggcctcatta gcagggacct 540
ggtggatcgt caaaggaggt ttggttggga agacttgttc aanatttngg aanttaagtt 600
gtccnnnaac tngcggggg gggnnnnncn nnttnccant tccctncccc cngtttttng 660
                                                                    662
nt
<210> 24
<211> 119
<212> PRT
<213> Homo sapiens
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```
<220>
<221> VARIANT
<222> 105
<223> Xaa = Any Amino Acid
<400> 24
Val Arg Val Ala Leu Ser Arg Leu Ala Gln Glu Arg Lys Ala Trp Arg
1
Lys Asp His Pro Phe Gly Phe Val Ala Val Pro Thr Lys Asn Pro Asp
Gly Thr Met Asn Leu Met Asn Trp Glu Cys Ala Ile Pro Gly Lys Lys
                            40
Gly Thr Pro Trp Glu Gly Gly Leu Phe Lys Leu Arg Met Leu Phe Lys
                                             60
                        55
Asp Asp Tyr Pro Ser Ser Pro Pro Lys Cys Lys Phe Glu Pro Pro Leu
                                         75
65
Phe His Pro Asn Val Tyr Pro Ser Gly Thr Val Cys Leu Ser Ile Leu
Glu Glu Asp Lys Asp Trp Arg Ala Xaa Ile Thr Ile Lys Gln Asp Pro
            100
Ile Arg Asn Thr Gly Thr Phe
        115
<210> 25
<211> 207
<212> DNA
<213> Artificial Sequence
<220>
<223> oligonucleotide
<221> misc_feature
<222> 112, 148, 158, 171, 178, 182, 191, 194, 203, 204
<223> n = A, T, C or G
<400> 25
ccctccctcc tgccgctcct ctctagaacc ttctagaacc tgggctgtgc tgcttttgag 60
cctcagaccc cagggcagca tctcggttct gcgccacttc ctttgtgttt anatggcgtt 120
ttgtctgtgt tgctgtttag agtagatnaa ctgtttanat aaaaaaaaa naaaattnac 180
                                                                   207
tngaggggc ntgnaggcat gcnnaac
<210> 26
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
<223> oligonucleotide
<400> 26
                                                                   21
gaagaggcaa gacgcttgta c
<210> 27
<211> 21
<212> DNA
<213> Homo sapiens
<400> 27
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gtacaagcgt cttgcctctt c	21
<210> 28 <211> 19 <212> DNA <213> Artificial Sequence	
<220> <223> oligonucleotide	
<400> 28 gagtttgagc agatgttta	19
<210> 29 <211> 20 <212> DNA <213> Artificial Sequence	
<220> <223> oligonucleotide	
<221> misc_feature <222> 3, 9, 15 <223> n = A,T,C or G	
<400> 29 ggnaargene ayeenearge	20
<210> 30 <211> 23 <212> DNA <213> Artificial Sequence	
<220> <223> oligonucleotide	
<221> misc_feature <222> 3, 6, 21 <223> n = A,T,C or G	
<400> 30 atngcnggrt aytgytgdat ntc	23
<210> 31 <211> 26 <212> DNA <213> Artificial Sequence	
<220> <223> oligonucleotide	
<400> 31 grgayttraw bgabgchyam gawtgg	26
<210> 32 <211> 35 <212> DNA <213> Artificial Sequence	

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<220>
<223> oligonucleotide
<400> 32
                                                                    35
caagcbtggg aymtymtyta ytatmaygtb ttcag
<210> 33
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> oligonucleotide
<400> 33
                                                                    22
gayybgartt ggctgtbcch gg
<210> 34
<211> 327
<212> DNA
<213> Homo sapiens
<400> 34
atgtccgtac aagtagaaac catctcccca ggagacgggc gcaccttccc caagcgcggc 60
cagacctgcg tggtgcacta caccgggatg cttgaagatg gaaagaaatt tgattcctcc 120
cgtgaccgta acaagccctt taagtttatg ctaggcaagc aggaggtgat ccgaggctgg 180
gaagaagggg ttgcccagat gagtgtgggt cagcgtgcca aactgactat atctccagat 240
tatgcctatg gtgccactgg gcacccaggc atcatcccac cacatgccac tctcgtcttc 300
                                                                    327
gatgtggagc ttctaaaact ggaatga
<210> 35
<211> 31
<212> DNA
<213> Artificial Sequence
<220>
<223> oligonucleotide
<400> 35
                                                                    31
gagatctgga attcggatcc tcgagagatc t
```